CLAIMS

1. A receiver circuit for adjusting the headroom for a received signal in a radio receiver, the received signal including a target signal and an interference signal, the circuit comprising:

an amplifier coupled with the received signal such that the amplifier outputs an amplified signal, the amplification level of the amplifier being set by an amplifier control signal;

an analog-to-digital converter coupled with the amplified signal, the analog-to-digital converter outputting a digital signal wherein the digital signal is a digital representation of the amplified signal;

a first digital filter having a first filter input coupled with the digital signal, the first digital filter filters the digital signal at a first interference attenuation factor to produce a first filter output coupled with the amplifier control signal, the first filter output being proportional to the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal; and

a second digital filter having a second filter input coupled with the digital signal, the second digital filter filters the digital signal at a second interference attenuation factor.

2. The receiver circuit of claim 1, wherein the first digital filter and the second digital filter are low-pass digital filters.

3. The receiver circuit of claim 1, wherein the first digital filter and the second digital filter are arranged in series circuit such that the first filter output is coupled with the second filter input.

4. The receiver circuit of claim 1, wherein the first digital filter and the second digital filter are arranged in parallel circuit.

5. The receiver circuit of claim 1, wherein the amplifier is an automatic gain control amplifier.

6. The receiver circuit of claim 1, wherein the analog-to-digital converter is a sigma-delta analog-to-digital converter.

7. The receiver circuit of claim 1, wherein the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal.

8. The receiver circuit of claim 1, wherein the second attention factor is greater than the first attenuation factor.

9. A method for adjusting the headroom for a received signal in a radio receiver, the received signal including a target signal and an interference signal, the method comprising:

amplifying the received signal at an amplification level to an amplified signal;

converting the amplified signal to a digital signal;

digitally filtering the digital signal at a first interference attenuation factor to produce a first filter output proportional to the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal;

adjusting the amplification level of the received signal based on the first digital filter output such that the difference between the maximum possible digital signal and the amplified signal is decreased when the interference signal is greater than the target signal; and

digitally filtering the digital signal at a second interference attenuation factor.

10. The method of claim 9, further comprises digitally filtering the digital signal at the first interference attenuation factor such that the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal.

11. The method of claim 9, wherein the second interference attention factor is greater than the first interference attenuation factor.

12. A system for adjusting the headroom for a received signal in a radio receiver, the received signal including a target signal and an interference signal, the system comprising:

an amplification module for amplifying the received signal at an amplification level to an amplified signal;

a conversion module for converting the amplified signal to a digital signal;

a first filtering module for digitally filtering the digital signal at a first interference attenuation factor to produce a first filter output proportional to the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal;

an adjusting module for adjusting the amplification level of the received signal based on the first digital filter output such that the difference between the maximum possible digital signal and the amplified signal is decreased when the interference signal is greater than the target signal; and

a second filtering module for digitally filtering the digital signal at a second interference attenuation factor.

13. The system of claim 12, wherein the first filtering module and the second filtering module are low pass digital filters.

14. The system of claim 12, wherein the first filtering module and the second filtering module are arranged in series circuit such that the first filter output is coupled with the second filter input.

15. The system of claim 12, wherein the first filtering module and the second filtering module are arranged in parallel circuit.

16. The system of claim 12, wherein the amplification module is an automatic gain control amplifier.

17. The system of claim 12, wherein the conversion module is an analog-to-digital converter.

18. The system of claim 17, wherein the analog-to-digital converter is a sigma-delta analog-to-digital converter.

19. The system of claim 12, wherein the second interference attention factor is greater than the first interference attenuation factor.

20. The system of claim 12, wherein the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal.